

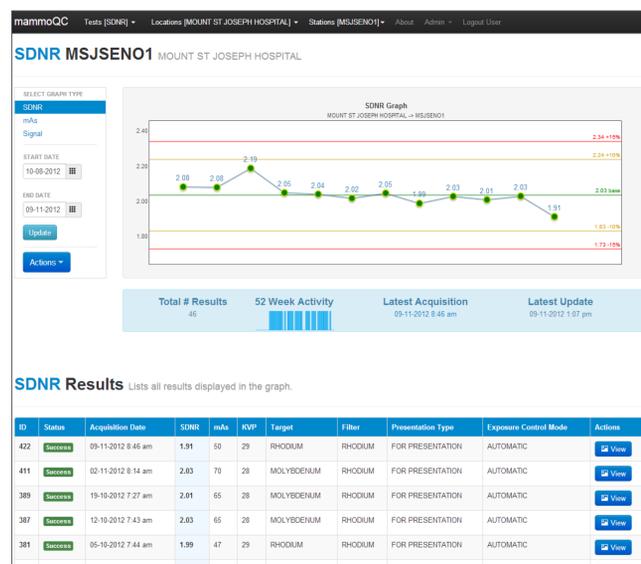
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## Introduction

- Weekly image QA for digital mammography units is tedious, time consuming, but essential.
- Many QA procedures are simple measurements that can be reliably replaced with simple software solutions.
- Sharing QA results across centers (i.e. with physicists) can be difficult. Digital images are too large to email, and sharing excel spreadsheets can easily become disorganized.
- British Columbia has addressed the issue of sharing digital images with the BC Transfer Grid, a DICOM based image sharing platform. But even this requires special software to be installed on specific computers, and access privileges to be granted.
- We have implemented a new QA platform that utilizes the BC Transfer Grid. It consists of networking, QA analysis, and Web-Based reporting components. This allows technologists to complete the QA process by simply pushing an image to the transfer grid, and immediately viewing the QA results on the website.



**Figure 1:** A screenshot of the mammoqc.ca website, showing a 12-day report on SDNR values. SDNR values are automatically calculated by the mQC server, and uploaded to the website in real-time for technologists to review.

## Objectives

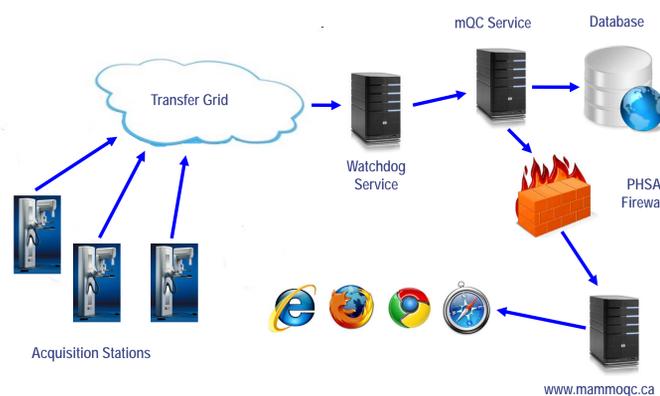
1. Automate trivial but time-consuming QA procedures for digital mammography using custom software.
2. Develop a user-friendly dynamic website for reporting QA results that can be viewed on any computer with internet access.
3. Facilitate simple communication between technologists and physicists, by creating a database-backed centralized location for storing and viewing QA data.
4. Utilize the BC Transfer Grid to create a centralized platform for QA analysis. Sites are not required to install or utilize any additional software – they merely need to push QA images to the transfer grid, and mQC will automatically pick them up and analyze them.
5. Extend the QA platform to incorporate additional tests.

## Design

- QA images are taken using the DD phantom. [Figure 2]
- Images have the patient name include “SDNR” and are uploaded to the BC Transfer Grid. The grid watchdog service downloads the new image, and pushes it to the mQC analysis server (which performs the SDNR calculations).
- The results are stored in a database, and forwarded to the mammoqc.ca website. Users may review the new results by logging in to the website from any computer. [Figure 3]



**Figure 2:** (Left) The DD Phantom used for QA image acquisition. (Right) The resulting digital mammogram, used for SDNR analysis.



**Figure 3:** Diagram of the architecture for the mQC platform. Images are uploaded to the transfer grid from individual mammography units. These images are picked up by the watchdog service, which forwards them for analysis by the mQC service. The results are then published to the mammoqc.ca website for review by technologists and physicists.

## Results

- Platform is currently in production, and the website can viewed at [www.mammoqc.ca](http://www.mammoqc.ca)
- Over 1140 QA results over the last 2 years
- Currently have over 26 BC screening sites participating
- In the process of expanding to service all digital sites across BC!
- Province of Ontario is in the process of implementing this platform



**Figure 4:** 12-day PDF printable report generated for a single mammography unit. Reports are created on-demand on the website, and will aid in documenting the units as well as for allowing processes like accreditation to be performed more efficiently.

## Conclusions

**We have created a centralized platform for automated QA analysis and reporting, for digital mammography sites across BC. We are currently in the process of bringing all digital sites in the province on-line with the service.**